

## **REMARKS**

In the Office Action mailed on November 3, 2005, claims 1-52 and 54-57 were pending. Claims 40-52 were withdrawn from consideration, and claims 1-39 and 54-57 were rejected.

Claims 1, 22, 37, and 38 have been amended. The proposed amendments do not contain new matter and support can be found in the originally filed specification and in the originally filed claims, among other places. Applicants respectfully request admission of the amended claims.

Claims 11, 14, 20, 21, 36, 39 and 54 have been cancelled and are no longer pending.

### **I. Rejections under 35 U.S.C. §102**

#### **A. Rejection over U.S. Patent No. 6,312,131 ("Yamamoto")**

In the Office Action at page 3, claims 1-19, 21-25, 32, 33, 36-39 and 54-57 were rejected under 35 U.S.C. §102(e) as being anticipated by Yamamoto. The Examiner stated that Yamamoto discloses a hydrophilic mirror coated with a multilayer coating, wherein the outermost surface layer has an average roughness of 0.5 to 25nm. Applicants respectfully traverse this rejection.

#### **1. The Present Invention**

The present invention as recited in amended claim 1 is an article, comprising: a substrate having at least one surface; a substantially non-porous, photo-induced hydrophilic coating consisting essentially of at least one metal oxide and/or metal alloy oxide selected from titanium oxides, silicon oxides, aluminum oxides, iron oxides, silver oxides, copper oxides, tungsten oxides,

zinc/tin alloy oxides, zinc stannates, molybdenum oxides, zinc oxides, strontium titanate, cobalt oxides, chromium oxides, and mixtures or combinations thereof deposited over at least a portion of the at least one surface; and at least one additional coating located between the photo-induced hydrophilic coating and the substrate, wherein (a) an outer surface of the photo-induced hydrophilic coating has a root mean square roughness of less than 2 nm; (b) the photo-induced hydrophilic coating is deposited by a process selected from chemical vapor deposition, magnetron sputtered vacuum deposition, and spray pyrolysis; and (c) the article has a visible light reflectance in the range of 15% to 25%.

The present invention as recited in amended claim 37 is an article, comprising: a substrate having at least one surface; a substantially non-porous, photo-induced hydrophilic coating consisting essentially of at least one metal oxide and/or metal alloy oxide selected from titanium oxides, silicon oxides, aluminum oxides, iron oxides, silver oxides, copper oxides, tungsten oxides, zinc/tin alloy oxides, zinc stannates, molybdenum oxides, zinc oxides, strontium titanate, cobalt oxides, chromium oxides, and mixtures or combinations thereof deposited over at least a portion of the at least one surface; and at least one additional coating located between the photo-induced hydrophilic coating and the substrate, wherein the photo-induced hydrophilic coating has a photocatalytic activity of less than or equal to  $3 \times 10^{-3} \text{ cm}^{-1} \text{ min}^{-1}$  and the article has a visible light reflectance in the range of 15% to 25%.

The present invention as recited in amended claim 38 is an article, comprising: a substrate having at least one surface; a substantially non-porous,

photo-induced hydrophilic coating consisting essentially of at least one metal oxide and/or metal alloy oxide selected from titanium oxides, silicon oxides, aluminum oxides, iron oxides, silver oxides, copper oxides, tungsten oxides, zinc/tin alloy oxides, zinc stannates, molybdenum oxides, zinc oxides, strontium titanate, cobalt oxides, chromium oxides, and mixtures or combinations thereof deposited over at least a portion of the at least one surface; and at least one additional coating located between the photo-induced hydrophilic coating and the substrate, wherein (a) the substrate is a float glass ribbon located in a molten metal bath; (b) the photo-induced hydrophilic coating has a thickness of 500 Å or less; (c) the photo-induced hydrophilic coating is deposited over the at least one surface in a molten metal bath by chemical vapor deposition; and (d) the article has a visible light reflectance in the range of 15% to 25%.

The present invention as recited in amended claim 39 is an article, comprising: a substrate having at least one surface; a substantially non-porous, photo-induced hydrophilic coating consisting essentially of at least one metal oxide and/or metal alloy oxide selected from titanium oxides, silicon oxides, aluminum oxides, iron oxides, silver oxides, copper oxides, tungsten oxides, zinc/tin alloy oxides, zinc stannates, molybdenum oxides, zinc oxides, strontium titanate, cobalt oxides, chromium oxides, and mixtures or combinations thereof deposited over at least a portion of the at least one surface; and at least one additional coating located between the photo-induced hydrophilic coating and the substrate, wherein (a) the photo-induced hydrophilic coating is deposited by chemical vapor deposition at a temperature in the range of 500°C to 1200°C; (b)

the photo-induced hydrophilic coating has a thickness of 500 Å or less; and (c) the article has a visible light reflectance in the range of 15% to 25%.

## **2. Yamamoto**

Yamamoto discloses a hydrophilic mirror comprising a glass substrate having on the main surface side thereof a layer having a refractive index  $n_1$  at 550 nm, a layer having a refractive index  $n_2$  at 550 nm, a titanium oxide layer having a refractive index  $n_3$  at 550 nm, and an overcoat in this order, the refractive indices  $n_1$ ,  $n_2$  and  $n_3$  satisfying the relationship:  $n_1 \geq n_3 > n_2$ , and having a visible light reflectance of 70% or more.

## **3. Traversal of the Rejection**

For a proper rejection under 35 U.S.C. § 102, the cited reference must disclose each and every limitation of the invention. The present invention as recited in amended claim 1 is an article comprising a substrate and a substantially non-porous, photo-induced hydrophilic coating, wherein the article has a visible light reflectance in the range of 15% to 25%.

In contrast to the present invention, Yamamoto discloses a mirror which must have a visible light reflectance that is much higher than the visible light reflectance of the present invention as recited in claim 1 to function properly. The visible light reflectance of the article recited in claim 1 ranges from 15% to 25%. As stated in column 2, lines 35 and 36 of Yamamoto, Yamamoto discloses a front surface hydrophilic mirror having a visible light reflectance of 70% or more.

Yamamoto does not disclose the limitation relating to the visible light reflectance of the article as recited in claim 1. As a result, Yamamoto does not disclose each and every of the limitation as recited in claim 1. Applicants respectfully request the withdrawal of this rejection.

Claims 2-10, 12, 13, 15-19, 22-25, 32 and 33 depend from claim 1 and recite the invention in varying scope. As discussed above, Yamamoto discloses a front surface hydrophilic mirror having a visible light reflectance of 70% or more. The article of the present invention as recited in 1 as further limited by claims 2-10, 12, 13, 15-19, 22-25, 32 and 33 exhibits a visible light reflectance ranging from 15% to 25%. As a result, claims 2-10, 12, 13, 15-19, 22-25, 32 and 33 are not anticipated by the cited reference, and Applicants respectfully request the withdrawal of this rejection of claims 2-10, 12, 13, 15-19, 22-25, 32 and 33.

The present invention as recited in amended claim 37 is an article, comprising a substrate and a substantially non-porous, photo-induced hydrophilic coating, wherein the photo-induced hydrophilic coating has a photocatalytic activity of less than or equal to  $3 \times 10^{-3} \text{ cm}^{-1} \text{ min}^{-1}$  and the article has a visible light reflectance in the range of 15% to 25%. As discussed above, Yamamoto discloses a front surface hydrophilic mirror having a visible light reflectance of 70% or more. The article of the present invention as recited in 37 exhibits a visible light reflectance ranging from 15% to 25%. Further, in the article as recited in claim 37, the photo-induced hydrophilic coating has a photocatalytic activity of less than or equal to  $3 \times 10^{-3} \text{ cm}^{-1} \text{ min}^{-1}$ . Such is not disclosed in

Yamamoto. As a result, claim 37 is not anticipated by the cited reference, and Applicants respectfully request the withdrawal of this rejection.

Claim 55 depends from claim 37 and recites the invention in varying scope. As discussed above, Yamamoto discloses a front surface hydrophilic mirror having a visible light reflectance of 70% or more. The article of the present invention as recited in 37 as further limited by claim 55 exhibits a visible light reflectance ranging from 15% to 25%. Further, in the article as recited in claim 55, the photo-induced hydrophilic coating has a photocatalytic activity of less than or equal to  $3 \times 10^{-3} \text{ cm}^{-1} \text{ min}^{-1}$  which is not disclosed in Yamamoto. As a result, claim 55 is not anticipated by the cited reference, and Applicants respectfully request the withdrawal of this rejection of claim 55.

The present invention as recited in amended claim 38 is an article comprising a substrate and a substantially non-porous, photo-induced hydrophilic coating, wherein (a) the substrate is a float glass ribbon located in a molten metal bath; (b) the photo-induced hydrophilic coating has a thickness of 500 Å or less; (c) the photo-induced hydrophilic coating is deposited over the at least one surface in a molten metal bath by chemical vapor deposition; and (d) the article has a visible light reflectance in the range of 15% to 25%. As discussed above, Yamamoto discloses a front surface hydrophilic mirror having a visible light reflectance of 70% or more. The article of the present invention as recited in 38 exhibits a visible light reflectance ranging from 15% to 25%. Further, in the article as recited in claim 38, (a) the substrate is a float glass ribbon located in a molten metal bath; (b) the photo-induced hydrophilic coating has a thickness of

500 Å or less; and (c) the photo-induced hydrophilic coating is deposited over the at least one surface in a molten metal bath by chemical vapor deposition. All of the aforementioned limitations in combination are not disclosed in Yamamoto. As a result, claim 38 is not anticipated by the cited reference, and Applicants respectfully request the withdrawal of this rejection.

Claim 56 depends from claim 38 and recites the invention in varying scope. As discussed above, Yamamoto discloses a front surface hydrophilic mirror having a visible light reflectance of 70% or more. The article of the present invention as recited in 38 as further limited by claim 56 exhibits a visible light reflectance ranging from 15% to 25%. Further, in the article as recited in claim 56, (a) the substrate is a float glass ribbon located in a molten metal bath; (b) the photo-induced hydrophilic coating has a thickness of 500 Å or less; and (c) the photo-induced hydrophilic coating is deposited over the at least one surface in a molten metal bath by chemical vapor deposition. All of the aforementioned limitations in combination are not disclosed in Yamamoto. As a result, claim 56 is not anticipated by the cited reference, and Applicants respectfully request the withdrawal of this rejection of claim 56.

The present invention as recited in amended claim 39 is an article comprising a substrate and a substantially non-porous, photo-induced hydrophilic coating, wherein (a) the photo-induced hydrophilic coating is deposited by chemical vapor deposition at a temperature in the range of 500°C to 1200°C; (b) the photo-induced hydrophilic coating has a thickness of 500 Å or less; and (c) the article has a visible light reflectance in the range of 15% to 25%. As

discussed above, Yamamoto discloses a front surface hydrophilic mirror having a visible light reflectance of 70% or more. The article of the present invention as recited in 39 exhibits a visible light reflectance ranging from 15% to 25%.

Further, in the article as recited in claim 39, (a) the photo-induced hydrophilic coating is deposited by chemical vapor deposition at a temperature in the range of 500°C to 1200°C and (b) the photo-induced hydrophilic coating has a thickness of 500 Å or less. All of the aforementioned limitations in combination are not disclosed in Yamamoto. As a result, claim 39 is not anticipated by the cited reference, and Applicants respectfully request the withdrawal of this rejection.

Claim 57 depends from claim 39 and recites the invention in varying scope. As discussed above, Yamamoto discloses a front surface hydrophilic mirror having a visible light reflectance of 70% or more. The article of the present invention as recited in 39 as further limited by claim 57 exhibits a visible light reflectance ranging from 15% to 25%. Further, in the article as recited in claim 57, (a) the photo-induced hydrophilic coating is deposited by chemical vapor deposition at a temperature in the range of 500°C to 1200°C and (b) the photo-induced hydrophilic coating has a thickness of 500 Å or less. All of the aforementioned limitations in combination are not disclosed in Yamamoto. As a result, claim 57 is not anticipated by the cited reference, and Applicants respectfully request the withdrawal of this rejection of claim 57.



## **B. Rejection over U.S. Patent No. 5,871,843 (“Yoneda”)**

In the Office Action at page 5, number 6, claims 1-12, 17-19, 21, 24-26, 29-33, 36, 54 and 57 were rejected under 35 U.S.C. §102(b) as being anticipated by Yoneda. The Examiner stated that Yoneda discloses a laminate substrate having low reflecting and stain-proofing (hydrophilic) properties, and the laminate has a flat portion having a surface roughness of at most 3 nm. Applicants respectfully traverse this rejection.

### **1. Yoneda**

Yoneda discloses a laminate comprising a substrate and at least one layer formed on the substrate, in which the outermost layer as a surface layer has a plurality of micropores therein and, at its surface, a flat portion and fine craters, the flat portion having a surface roughness  $R_a$  of at most 3 nm and an area ratio of at least 20%.

### **2. Traversal of the Rejection**

The rule for a proper rejection under 35 U.S.C. §102 is shown above. The present invention as recited in amended claim 1 is an article comprising a substrate and a substantially non-porous, photo-induced hydrophilic coating. In contrast to the present invention, Yoneda discloses a substrate and at least one layer formed on the substrate, in which the outermost layer as a surface layer has a **plurality of micropores**.

The article recited in claim 1 comprises a substantially non-porous, photo-induced hydrophilic coating as the outermost layer. As stated in column 5, lines

13-15 of Yoneda, the average size of the microspores present in the film is preferably from 10 to 150 nm from the viewpoint of low reflecting properties and mechanical strength.

Yoneda does not disclose the limitation relating to the substantially non-porous-ness of the photo-induced hydrophilic coating. Further, Yoneda does not disclose that the substrate exhibits a visible light reflectance ranging from 15% to 25%. As a result, Yoneda does not disclose each and every of the limitation as recited in claim 1. Applicants respectfully request the withdrawal of this rejection.

Claims 2-10, 12, 17-19, 24-26 and 29-33 depend from claim 1 and recite the invention in varying scope. The article of the present invention as recited in 1 as further limited by claims 2-10, 12, 17-19, 24-26 and 29-33 comprises a substantially non-porous, photo-induced hydrophilic coating and exhibits a visible light reflectance ranging from 15% to 25%. As discussed above, Yoneda does not disclose the limitation relating to the substantially non-porous-ness of the photo-induced hydrophilic coating. Further, Yoneda does not disclose that the substrate exhibits a visible light reflectance ranging from 15% to 25% and other limitations contained in the dependent claims such as the photocatalytic activity of the article, etc. As a result, claims 2-10, 12, 17-19, 24-26 and 29-33 are not anticipated by the cited reference, and Applicants respectfully request the withdrawal of this rejection of claims 2-10, 12, 17-19, 24-26 and 29-33.

Claim 57 depends from claim 39 and recites the invention in varying scope. The article of the present invention as recited in 39 as further limited by claim 57 comprises a substantially non-porous, photo-induced hydrophilic

coating. Further, in the article as recited in claim 57, (a) the photo-induced hydrophilic coating is deposited by chemical vapor deposition at a temperature in the range of 500°C to 1200°C, (b) the photo-induced hydrophilic coating has a thickness of 500 Å or less and (c) and the article exhibits a visible light reflectance ranging from 15% to 25%. As discussed above, Yoneda does not disclose the limitation relating to the substantially non-porous-ness of the photo-induced hydrophilic coating. Further, Yoneda does not disclose all of the aforementioned limitations in combination. As a result, claim 57 is not anticipated by the cited reference, and Applicants respectfully request the withdrawal of this rejection of claim 57.

## **II. Rejections under 35 U.S.C. §103**

### **A. Rejection over U.S. Patent No. 5,873,203 (“Thiel”) in view of Japanese Patent Application Publication No. 11-090237 (“JP 237”)**

In the Office Action, claims 1-13, 16-19, 21, 22, 24-28, 30, 32-34, 36, 38, 39, 54, 56 and 57 were rejected under 35 U.S.C. §103(a) as being unpatentable over Thiel in view of JP 237. The Examiner stated that Thiel does not specifically disclose the amount of surface roughness associated with the photocatalytic coating, but it would have been obvious to one skilled in the art at the time of the invention to modify the surface of Thiel with the surface roughness of JP 237 in order to increase the surface area of the photocatalytic film. Applicants respectfully traverse this rejection.

## **1. Cited References**

### **a. Thiel**

Thiel discloses a multiple-glazed window unit of the type which includes two or more sheets maintained in spaced relationship to each other by a spacing assembly to form an airspace wherein surfaces of the unit in contact with the airspace are subject to the accumulation thereon of moisture and/or organic contaminants present in the airspace is rendered self-desiccating of accumulated moisture and/or self-cleaning of accumulated organic surface contaminants by coating such surfaces with a photoelectrolytically-desiccating coating and/or a photocatalytically-activated self-cleaning coating. Exterior surfaces of the unit may also be rendered self-cleaning of accumulated organic surface contaminants by coating such exterior surfaces with a photocatalytically-activated self-cleaning coating.

### **b. JP 237**

JP 237 discloses forming photocatalytic films in which the surface roughness is less than or equal to 20 nm on the surface of a substrate. Substances such as glass, ceramics, pottery, stone, metal and wood can be used for the substrate.

## **2. Traversal of the Rejection**

For a proper rejection under 35 U.S.C. § 103, the PTO must satisfy three requirements. First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some

suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. See In re Fine, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. See Amgen, Inc., 927 F.2d 1200, 1209, 18 U.S.P.Q.2d 1016, 1023 (Fed Cir. 1991). Lastly, the prior art reference or combination of references must teach or suggest all the limitations of the claims. See In re Wilson, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

The present invention as recited in amended claim 1 is an article comprising a substrate and a substantially non-porous, photo-induced hydrophilic coating, wherein the article has a visible light reflectance in the range of 15% to 25%. The combination of Thiel and JP 237 teaches a substrate having a photocatalytic film having a surface roughness less than or equal to 20 nm.

Thiel, either alone or in combination with JP 237, does not teach, either explicitly or implicitly, an article comprising a substantially non-porous, photo-induced hydrophilic coating, wherein the article has a visible light reflectance in the range of 15% to 25%. Nor would it be obvious to formulate an article comprising the substantially non-porous, photo induced hydrophilic coating that exhibits a visible light reflectance in the range of 15% to 25% based on the teachings of Thiel and JP 237. A coated substrate resulting from the combination of Thiel and JP 237 could exhibit a visible light reflectance outside the range recited in claim 1.

Because the combination of references does not teach or suggest, either explicitly or implicitly, all the limitations of the claim 1, the article of claim 1 is patentably distinguishable over the combination of Thiel and JP 237. Applicants respectfully request the withdrawal of this rejection.

Claims 2-10, 12, 13, 16-19, 22, 24-28, 30, and 32-34 depend from claim 1 and recite the invention in varying scope. For the reasons discussed above, there is nothing in Thiel, either alone or in combination with JP237, that teaches the article comprising a substantially non-porous, photo-induced hydrophilic coating, wherein the article has a visible light reflectance in the range of 15% to 25% as recited in claim 1 as further limited by claims 2-10, 12, 13, 16-19, 22, 24-28, 30, and 32-34. Further, the combination of references does not teach the limitations recited in the dependent claims such as the contact angle of a water droplet on the after the coating is exposed to UVA340 radiation at  $24 \text{ W/m}^2$  for 60 mins; the thickness of the photo-induced hydrophilic coating; the photocatalytic activity of the article; etc. As a result, claims 2-10, 12, 13, 16-19, 22, 24-28, 30, and 32-34 are patentably distinguishable over the cited references, and Applicants respectfully request the withdrawal of this rejection.

The present invention as recited in amended claim 38 is an article comprising a substrate and a substantially non-porous, photo-induced hydrophilic coating, wherein (a) the substrate is a float glass ribbon located in a molten metal bath; (b) the photo-induced hydrophilic coating has a thickness of  $500 \text{ \AA}$  or less; (c) the photo-induced hydrophilic coating is deposited over the at least one

surface in a molten metal bath by chemical vapor deposition; and (d) the article has a visible light reflectance in the range of 15% to 25%.

As discussed above, Thiel, either alone or in combination with JP 237, does not teach, either explicitly or implicitly, an article comprising a substantially non-porous, photo-induced hydrophilic coating, wherein the article has a visible light reflectance in the range of 15% to 25%. Nor would it be obvious to formulate an article comprising the substantially non-porous, photo induced hydrophilic coating that exhibits a visible light reflectance in the range of 15% to 25% based on the teachings of Thiel and JP 237. Further, the combination of cited references does not teach the following limitations in combination: (a) the substrate is a float glass ribbon located in a molten metal bath; (b) the photo-induced hydrophilic coating has a thickness of 500 Å or less; and (c) the photo-induced hydrophilic coating is deposited over the at least one surface in a molten metal bath by chemical vapor deposition.

Because the combination of references does not teach or suggest, either explicitly or implicitly, all the limitations of the claim 38, the article of claim 38 is patentably distinguishable over the combination of Thiel and JP 237. Applicants respectfully request the withdrawal of this rejection.

Claim 56 depends from claim 38 and recites the invention in varying scope. For the reasons discussed above, there is nothing in Thiel, either alone or in combination with JP237, that teaches the article comprising a substantially non-porous, photo-induced hydrophilic coating, wherein the article has a visible light reflectance in the range of 15% to 25% as recited in claim 38 as further

limited by claim 56. Further, the combination of references does not teach the limitations recited in the dependent claim such as the thickness of the photo-induced hydrophilic coating. As a result, claim 56 is patentably distinguishable over the cited references, and Applicants respectfully request the withdrawal of this rejection.

The present invention as recited in amended claim 39 is an article comprising a substrate and a substantially non-porous, photo-induced hydrophilic coating, wherein (a) the photo-induced hydrophilic coating is deposited by chemical vapor deposition at a temperature in the range of 500°C to 1200°C; (b) the photo-induced hydrophilic coating has a thickness of 500 Å or less; and (c) the article has a visible light reflectance in the range of 15% to 25%.

As discussed above, Thiel, either alone or in combination with JP 237, does not teach, either explicitly or implicitly, an article comprising a substantially non-porous, photo-induced hydrophilic coating, wherein the article has a visible light reflectance in the range of 15% to 25%. Nor would it be obvious to formulate an article comprising the substantially non-porous, photo induced hydrophilic coating that exhibits a visible light reflectance in the range of 15% to 25% based on the teachings of Thiel and JP 237. Further, the combination of cited references does not teach the following limitations in combination: (a) the photo-induced hydrophilic coating is deposited by chemical vapor deposition at a temperature in the range of 500°C to 1200°C and (b) the photo-induced hydrophilic coating has a thickness of 500 Å or less.



Because the combination of references does not teach or suggest, either explicitly or implicitly, all the limitations of the claim 39, the article of claim 39 is patentably distinguishable over the combination of Thiel and JP 237. Applicants respectfully request the withdrawal of this rejection.

Claim 57 depends from claim 39 and recites the invention in varying scope. For the reasons discussed above, there is nothing in Thiel, either alone or in combination with JP237, that teaches the article comprising a substantially non-porous, photo-induced hydrophilic coating, wherein the article has a visible light reflectance in the range of 15% to 25% as recited in claim 39 as further limited by claim 57. Further, the combination of references does not teach the limitations recited in the dependent claim such as the thickness of the photo-induced hydrophilic coating. As a result, claim 57 is patentably distinguishable over the cited references, and Applicants respectfully request the withdrawal of this rejection.

**B. Rejection over U.S. Patent No. 6,387,514 (“Legrand”) in view of JP 237**

In the Office Action at page 10, number 10, claims 1 and 20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Legrand in view of JP 237. The Examiner stated that Legrand does not specifically disclose that the surface layer is hydrophilic having a surface roughness of less than 1 nm, but it would have been obvious to one skilled in the art at the time of invention to modify the surface of Legrand as taught in JP 237 in order to provide a glazing surface with

increased surface area of the hydrophilic film. Applicants respectfully traverse this rejection.

### **1. Legrand**

Legrand discloses a solar control coated substrate with high reflectance (RL) and comprises a pyrolytically-formed coating layer containing oxides of tin and antimony in a Sb/Sn molar ratio of from 0.03 to 0.16, characterized in that the coating layer further contains additives comprising at least one element selected from the group consisting of aluminum, chromium, cobalt, iron, manganese, magnesium, nickel, vanadium, zinc, and zirconium and is free from fluorine, whereby the so coated substrate has a reflectance of at least 10%.

### **2. Traversal of the Rejection**

The rule for a proper rejection under 35 U.S.C. §103 is shown above. The present invention as recited in amended claim 1 is an article comprising a substantially non-porous, photo-induced hydrophilic coating consisting essentially of at least one metal oxide and/or metal alloy oxide selected from titanium oxides, silicon oxides, aluminum oxides, iron oxides, silver oxides, copper oxides, tungsten oxides, zinc/tin alloy oxides, zinc stannates, molybdenum oxides, zinc oxides, strontium titanate, cobalt oxides, chromium oxides, and mixtures or combinations thereof, wherein (a) an outer surface of the photo-induced hydrophilic coating has a root mean square roughness of less than 2 nm; (b) the photo-induced hydrophilic coating is deposited by a process selected from chemical vapor deposition, magnetron sputtered vacuum deposition, and spray

pyrolysis; and (c) the article has a visible light reflectance in the range of 15% to 25%.

Legrand teaches a solar control coated substrate with high reflectance and comprises a pyrolytically-formed coating layer containing oxides of tin and antimony in a Sb/Sn molar ratio of from 0.03 to 0.16. The Examiner is using JP 237 to teach that the coating in Legrand can have a surface roughness of less than or equal to 20 nm. The combination of Legrand and JP 237 teaches a substrate having a coating layer containing oxides of tin and antimony in a Sb/Sn molar ratio of from 0.03 to 0.16 and the coating has a surface roughness of less than or equal to 20 nm.

For the combination of Legrand and JP 237 to teach the present invention as recited in claim 1, the coating of Sb/Sn would have to be the photo-induced hydrophilic coating in claim 1 since the Examiner is saying it can be modified to have the surface roughness of the photo-induced hydrophilic coating recited in claim 1 based on the teaching of JP 237. According to the present invention, that can't be so because the substantially non-porous, photo-induced hydrophilic coating is recited as **consisting essentially of** at least one metal oxide and/or metal alloy oxide selected from titanium oxides, silicon oxides, aluminum oxides, iron oxides, silver oxides, copper oxides, tungsten oxides, zinc/tin alloy oxides, zinc stannates, molybdenum oxides, zinc oxides, strontium titanate, cobalt oxides, chromium oxides, and mixtures or combinations thereof. In light of the "consisting essentially of" transition language, a coating of Sb/Sn cannot be the substantially non-porous, photo-induced hydrophilic coating recited in claim 1.

Further, the substantially non-porous, photo-induced hydrophilic coating recited in claim 1 cannot be obvious based on the teachings of Legrand and JP 237 because the combination of Sb and Sn taught by the combination cannot be included in substantially non-porous, photo-induced hydrophilic coating recited in claim 1.

Because the combination of references does not teach or suggest, either explicitly or implicitly, all the limitations of the claim 1, the article of claim 1 is patentably distinguishable over the combination of Legrand and JP 237.

Applicants respectfully request the withdrawal of this rejection.

Claim 20 depends from claim 1 and recites the invention in varying scope. For the reasons discussed above, there is nothing in Legrand, either alone or in combination with JP237, that teaches the article comprising a substantially non-porous, photo-induced hydrophilic coating **consisting essentially of** at least one metal oxide and/or metal alloy oxide selected from titanium oxides, silicon oxides, aluminum oxides, iron oxides, silver oxides, copper oxides, tungsten oxides, zinc/tin alloy oxides, zinc stannates, molybdenum oxides, zinc oxides, strontium titanate, cobalt oxides, chromium oxides, and mixtures or combinations thereof. as recited in claim 1 as further limited by claim 20. Further, the combination of references does not teach the limitations recited in the dependent claim such as the thickness of the photo-induced hydrophilic coating. As a result, claim 20 is patentably distinguishable over the cited references, and Applicants respectfully request the withdrawal of this rejection.

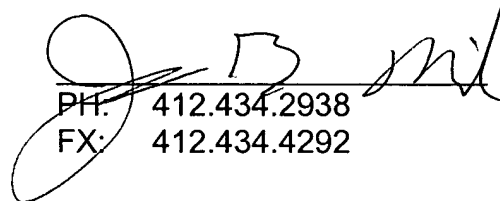
## Conclusions

In light of the amendments and remarks presented in this correspondence, Applicants respectfully request withdrawal of the following rejections: the rejection of claims 1-19, 21-25, 32, 33, 36-39 and 54-57 under 35 U.S.C. §102(e) as being anticipated by Yamamoto; the rejection of claims 1, 2-12, 17-19, 21, 24-26, 29-33, 36, 54 and 57 under 35 U.S.C. §102(b) as being anticipated by Yoneda; the rejection of claims 1-13, 16-19, 21, 22, 24-28, 30, 32-34, 36, 38, 39, 54, 56 and 57 were under 35 U.S.C. §103(a) as being unpatentable over Thiel in view of JP 237; the rejection of claims 1 and 20 under 35 U.S.C. §103(a) as being unpatentable over Legrand in view of JP 237; and the allowance of claims 1-9, 10-13, 15-19, 22-35, 37-29 and 55-57.

If any questions remain about this application, the Examiner is requested to contact Applicants' attorney at the telephone number provided below. Thank you.

Respectfully submitted,

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